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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/538,869

06/14/2005

Yasumasa Watanabe

4706-03

5889

23117

7590

12/21/2006

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EXAMINER

RABAGO, ROBERTO

ART UNIT

PAPER NUMBER

1713

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

12/21/2006

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/538,869	WATANABE ET AL.	
	Examiner	Art Unit	
	Roberto Rábago	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/4/2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/4/2006 has been entered.

Claim Rejections - 35 USC § 112

2. Claims 2-9 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2 (and claims 3-9 and 17 by dependency), the intended amount of each of the hydroperoxide and radical generator cannot be determined. Specifically, it cannot be determined whether the required "0.1 to 20 parts by weight" applies to: (a) only the peroxide having a hydroperoxy group, (b) each separately of the peroxide having a hydroperoxy group and the radical generator, or (c) the combined total of the peroxide having a hydroperoxy group and the radical generator.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 8-10 and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Stemke (US 4,891,146).

The reference discloses processes of hydroperoxidizing ethylene copolymers and terpolymers for making lube additives (abstract). Example 1 discloses reaction of an ethylene/propylene/1,4-hexadiene terpolymer of 250,000 molecular weight with dicumyl peroxide and cumene hydroperoxide at 190°C, resulting in a functionalized terpolymer having 0.28 mmol OH/ 100 g polymer. The reference example has not reported the Mooney viscosity (the only Mooney viscosity reported in the reference is for Example 4, which is a ethylene/propylene copolymer of Mooney viscosity 60). However, the example terpolymer would appear to have a value within the claimed range because applicants have claimed a broad range of values which are conventional for the types of copolymers used in the reference. The reference further has not reported the lack of crosslinking; however, crosslinking is clearly not the objective of the reference process, and neither the reaction conditions nor the description of the functionalized polymer produced would imply that crosslinking has occurred. The burden of proof is shifted to applicants to show that the cited example does not include

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the claimed Mooney viscosity or lack of crosslinking. Regarding claims 8 and 9, which include the product-by-process limitation regarding a hydroperoxide/radical generator ratio, there is nothing on the record which would indicate that this feature would exclude the reference products from the scope of the claims, further in view of the fact that both the reference and the instant claims appear obtain a substantially similar result:

functionalization of copolymer and terpolymers with hydroxyl groups. Applicants' Comparative Example 4 is noted; however, this example is not relevant to the applied reference because the Comparative example product is stated to have cross-linked, and therefore is therefore not analogous to reference Example 1.

5. Claims 2, 3, 5-9 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaglia (EP 1013673).

The reference discloses in Example 5 the reaction of an ethylene/propylene copolymer of 138,000 molecular weight with 3:1 t-butyl hydroperoxide and dicumyl peroxide at 145°C. The reference example has not reported the Mooney viscosity; however, the example copolymer would appear to have a value within the claimed range because applicants have claimed a broad range of values which are conventional for the types of copolymers used in the reference. The reference further has not reported the lack of crosslinking; however, crosslinking is clearly not the objective of the reference process, and neither the reaction conditions nor the description of the product polymer produced would imply that crosslinking has occurred. The burden of proof is shifted to applicants to show that the cited example does not include the claimed

Mooney viscosity or lack of crosslinking. The additional components of claim 9 would be immediately envisaged in view of the reference disclosure at page 3, lines 12-14.

Claim Rejections - 35 USC § 103

6. Claims 1, 8-10 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita et al. (US 4,943,658) for the reasons set forth in item 3 of the Office action mailed 6/2/2006 and the Advisory Action mailed 11/28/2006.

7. Claims 1, 8-11 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Funaki et al. (US 20020119319) for the reasons set forth in item 4 of the Office action mailed 6/2/2006 and the Advisory Action mailed 11/28/2006.

8. Claims 2, 3, 5-9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stemke (US 4,891,146).

The reference discloses processes of hydroperoxidizing ethylene copolymers and terpolymers for making lube additives (abstract), and Example 1 discloses reaction of an ethylene/propylene/1,4-hexadiene terpolymer of 250,000 molecular weight with dicumyl peroxide and cumene hydroperoxide at 190°C, resulting in a functionalized terpolymer having 0.28 mmol OH/ 100 g polymer. The reference states at col. 4, lines 56-65 that the preferred initiators may be mixtures of peroxides and hydroperoxides, and specifically recommends a mixture of cumene hydroperoxide and dicumyl peroxide. Although the reference includes no general discussion of the relative amounts of each

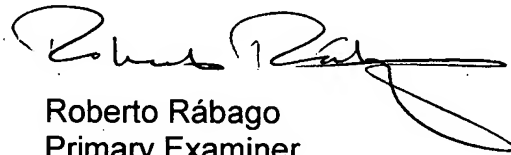
component, one of ordinary skill in the art would be motivated to use a reasonable range of "mixtures thereof," including mixtures wherein the mass of hydroperoxy compound equals or exceeds that of the radical generator, with reasonable success expected.

The reference example has not reported the Mooney viscosity (the only Mooney viscosity reported in the reference is for Example 4, which is a ethylene/propylene copolymer of Mooney viscosity 60). However, the copolymers and terpolymers recommended in the reference would appear to have a value within the claimed range because applicants have claimed a broad range of conventional values. The reference further has not reported the lack of crosslinking; however, crosslinking is clearly not the objective of the reference process, and neither the reaction conditions nor the description of the functionalized polymer produced would imply that crosslinking has occurred. The burden of proof is shifted to applicants to show that the cited example does not include the claimed Mooney viscosity or lack of crosslinking. Applicants' Comparative Example 4 is noted; however, this example is not relevant to the applied reference because the Comparative example product is stated to have cross-linked, and therefore is therefore not analogous to processes recommended in the reference.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberto Rábago whose telephone number is (571) 272-1109. The examiner can normally be reached on Monday - Friday from 8:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Roberto Rábago
Primary Examiner
Art Unit 1713

RR
December 18, 2006